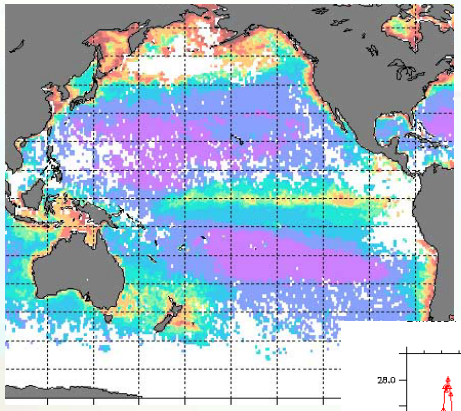
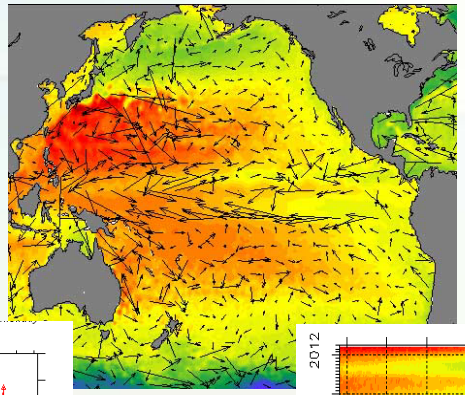
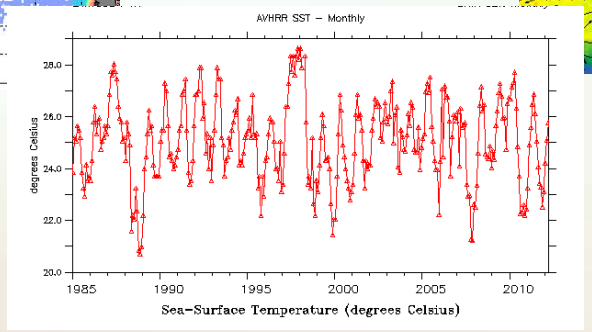
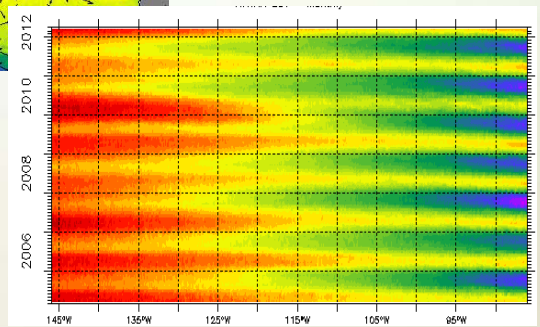
NOAA OceanWatch – Central Pacific

Satellite Oceanography Products & Applications









Lucas Moxey, Node Manager
Jeffrey Polovina, Principal Investigator
Pacific Islands Fisheries Science Center
NOAA Fisheries

NOAA OceanWatch – Central Pacific

1. Current Remote Sensing Dataset Inventory

- *OceanWatch CP* currently provides regional & global satellite oceanography data for over two dozen satellite remotely-sensed data types and several user-specific products

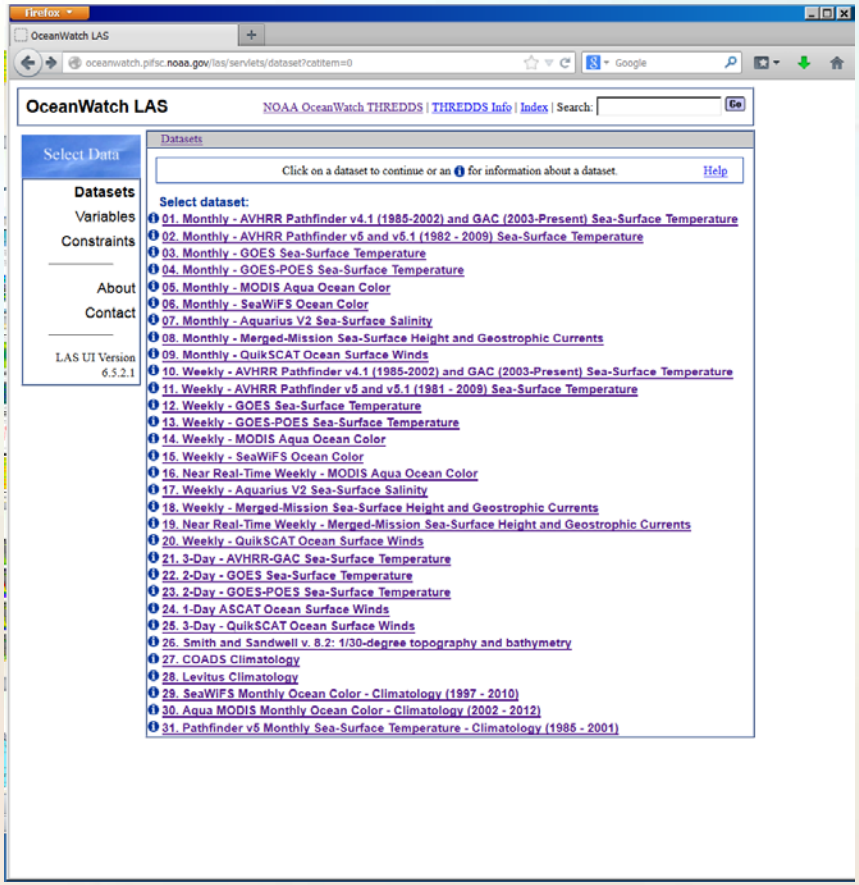
- Established web and data server portals via *Live Access Server* & *THREDDS* that allows users to select:
  - Area of interest
  - Time period(s)
  - Output format & visualizations
  - Provide "on-the-fly" data access
  - ****Direct data access (remote download)**

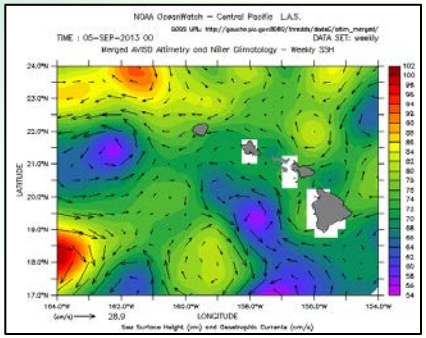
Web Address:

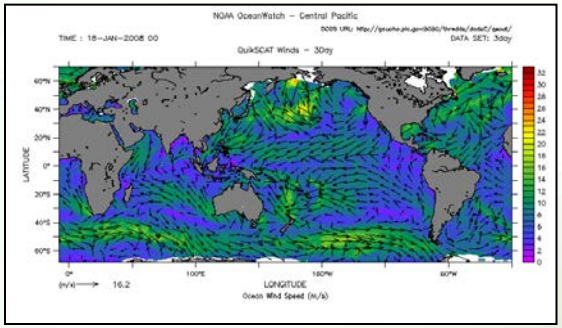
http://oceanwatch.pifsc.noaa.gov

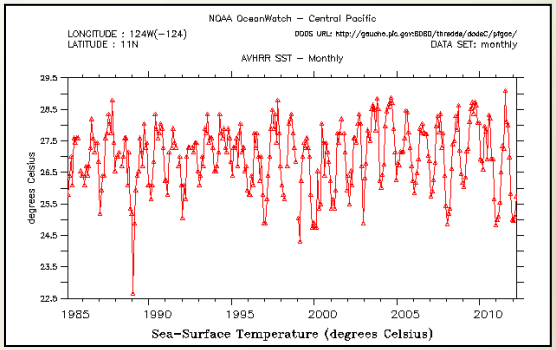
NOAA OceanWatch – Central Pacific

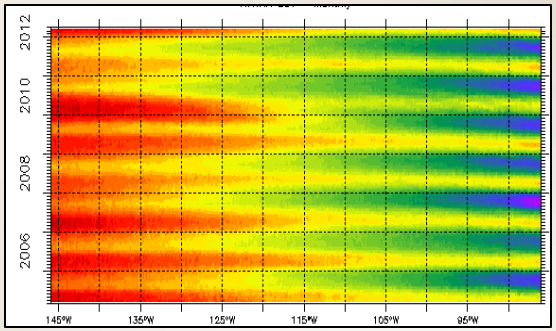
1. Current Remote Sensing Dataset Inventory











NOAA OceanWatch – Central Pacific

1. Current Remote Sensing Dataset Inventory

Six Primary Satellite RS Datasets:

1. Sea-Surface Temperature
   - AVHRR-GAC & Pathfinder (1985 – Present)
   - GOES (2001 – Present)
   - GOES-POES (2012 – Present)
   - AVHRR-HRPT (Ongoing 14 days)

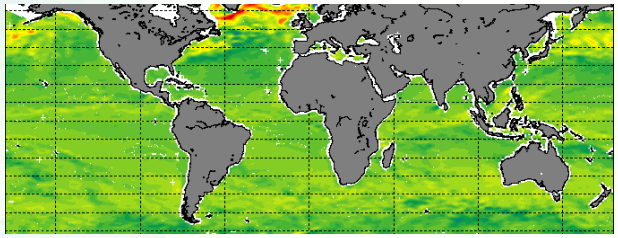
2. Ocean Color (Chlorophyll-a)
   - SeaWiFS (1997 – 2010)
   - MODIS Aqua (2002 – Present)

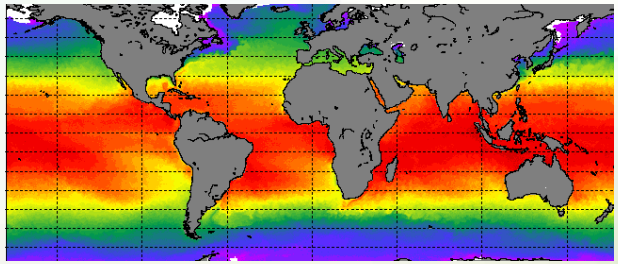
3. Sea-Surface Height
   - Multi-Satellite Mission (1992 – Present)

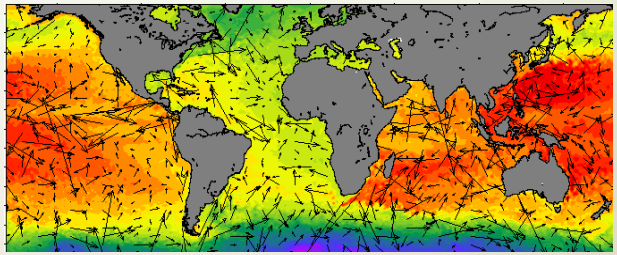
4. Sea-Surface Salinity
   - Aquarius (2011 – Present)

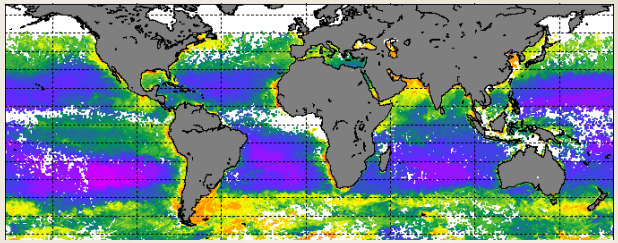
4. Ocean Winds
   - QuikSCAT (1999 - 2009)
   - ASCAT (2010 – Present)

5. Other
   - MODIS True Color 250m (Ongoing 7 days)
   - AVHRR-HRPT True Color 1.1km (14 days)
   - Internal datasets (R&D)







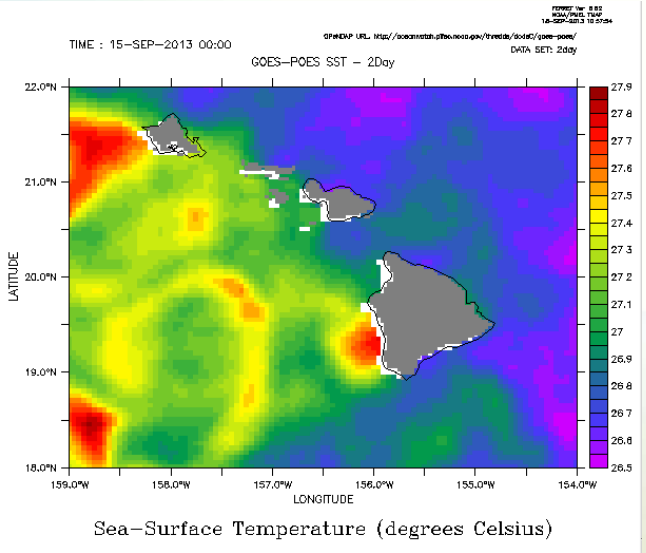


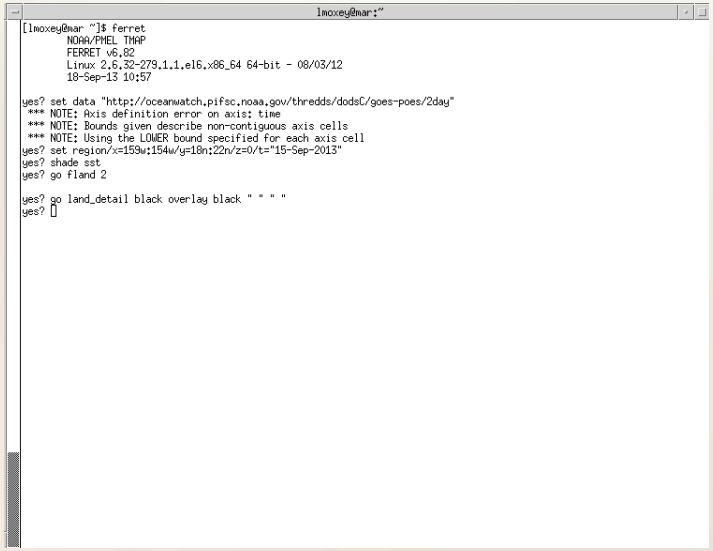
NOAA OceanWatch – Central Pacific

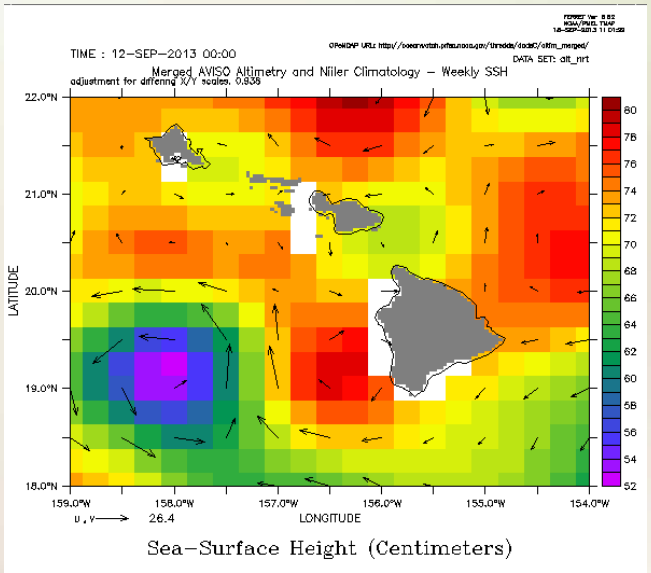
3. Users & Collaborations

Oceanographic Research & Data Analysis

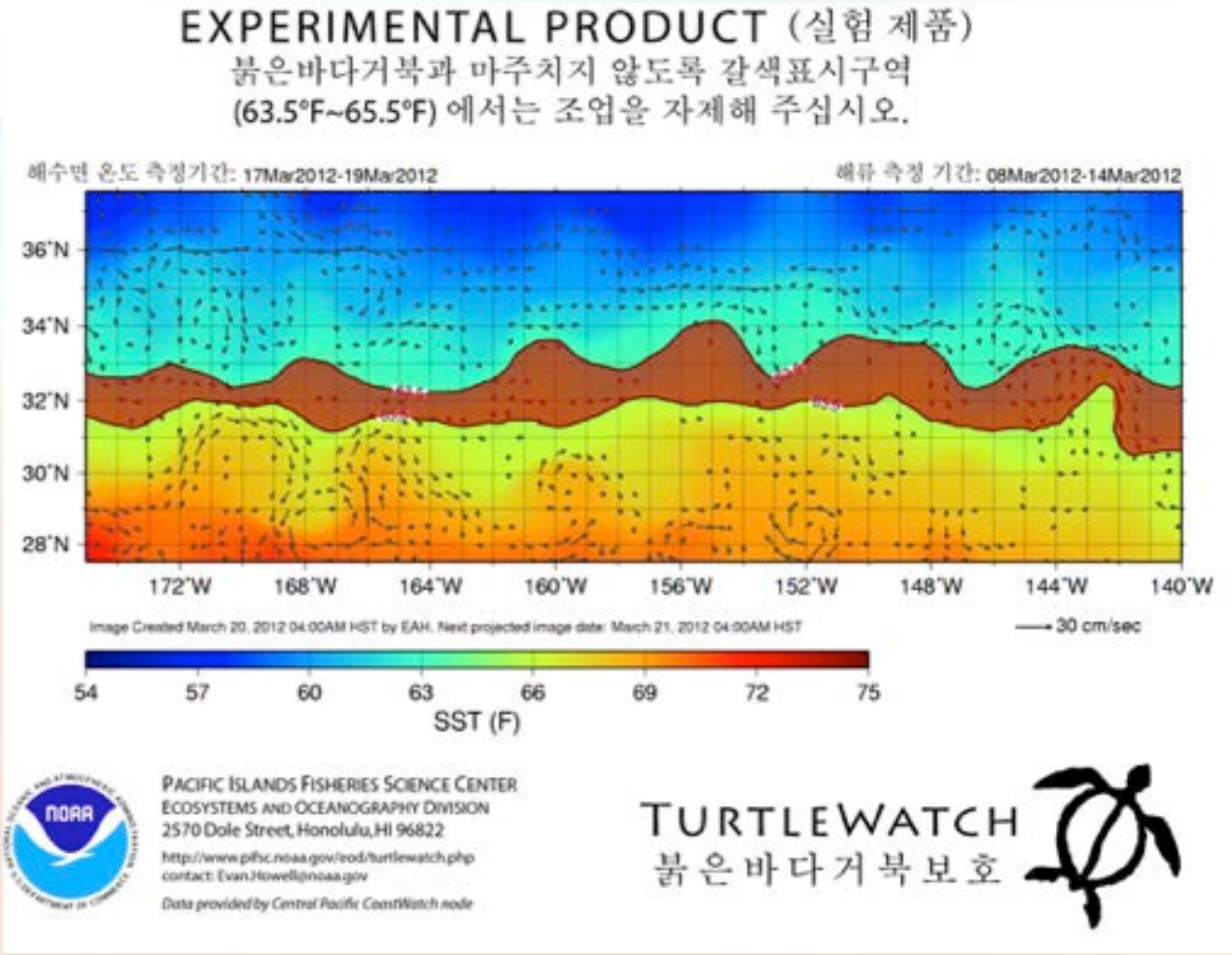
- Researchers worldwide access OW data via THREDDS
- 1.2 Terabytes of oceanographic data (updated hourly)
- Free & unrestricted access via TDS technology
  - MATLAB
  - IDL
  - Ferret
  - ArcGIS



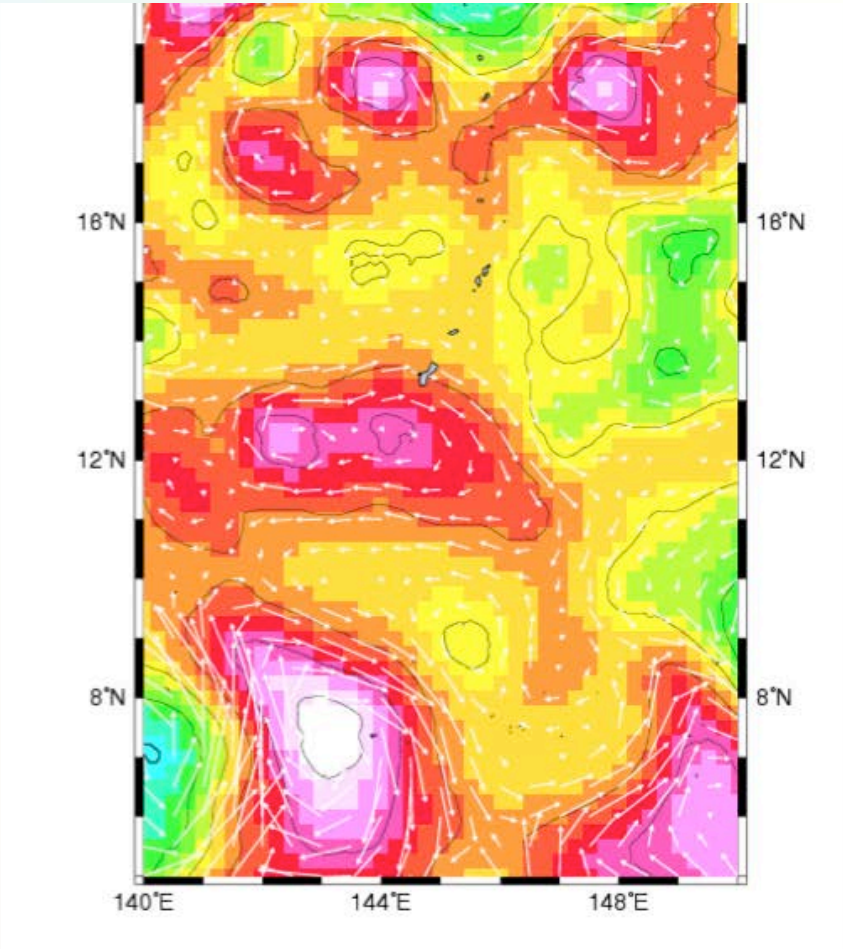




Use of OceanWatch data to reduce turtle interactions in the longline fishery for swordfish



Use of OceanWatch data in cruise support



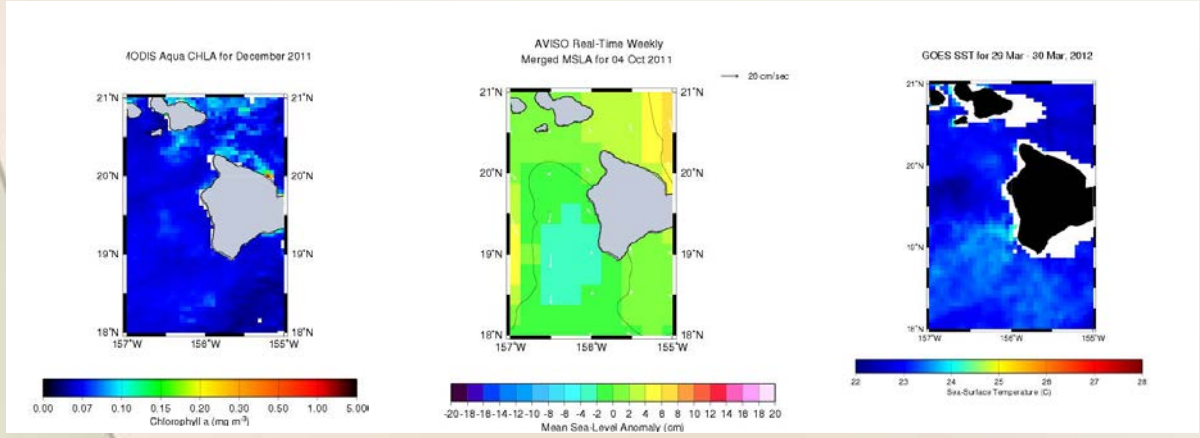
NOAA OceanWatch – Central Pacific

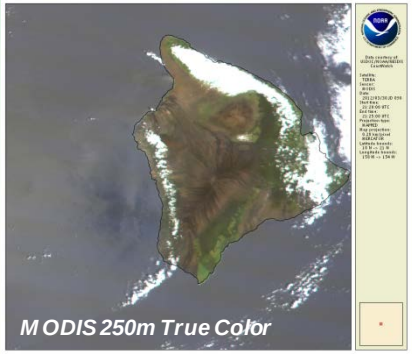
2. Users & Collaborations

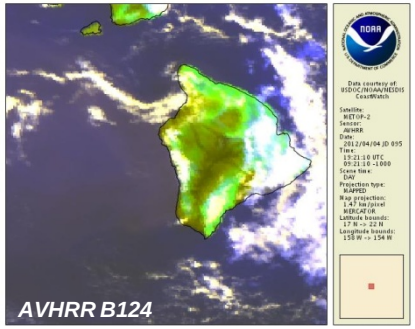
Support for the NOAA PIFSC – Kona IEA Program

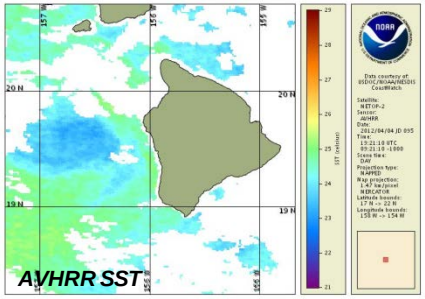
Provision of multiple daily/weekly/monthly RS datasets

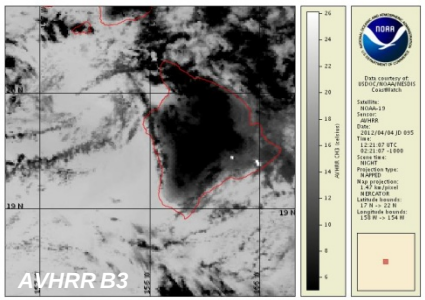
- MODIS 250m True Color
- AVHRR-HRPT
  - True Color Composite
  - Thermal IR
  - Sea-Surface Temperature
- GOES Sea-Surface Temperature
- AVISO Sea-Surface Height & Geostrophic Currents
- MODIS Aqua Chlorophyll-a Concentrations









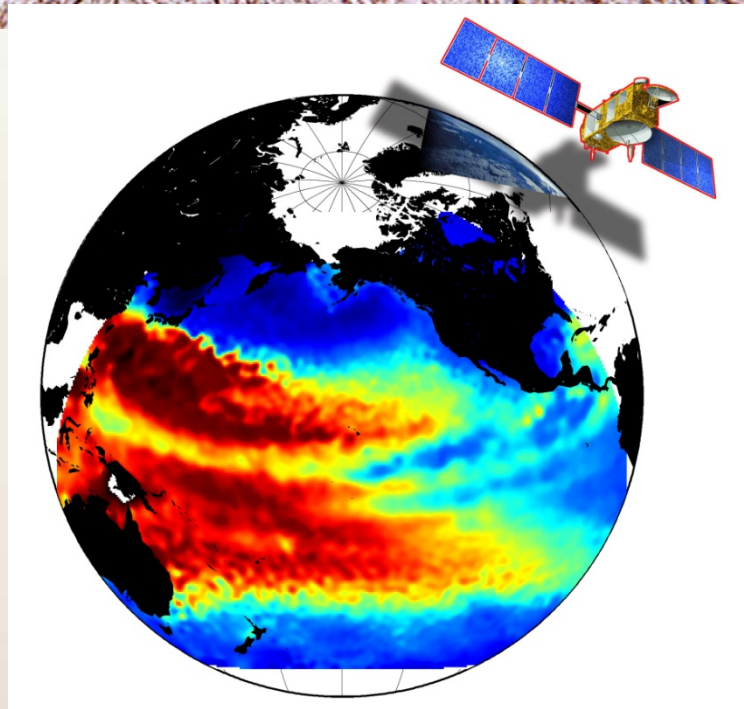


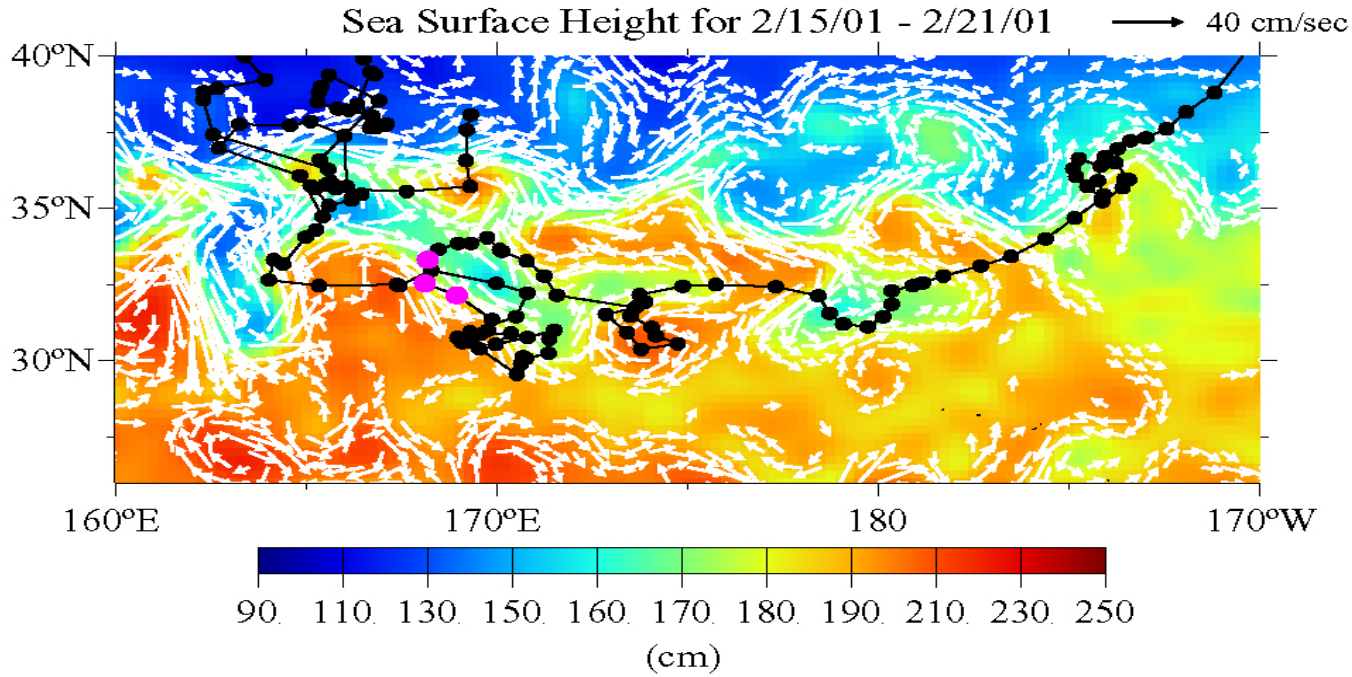
NOAA OceanWatch – Central Pacific

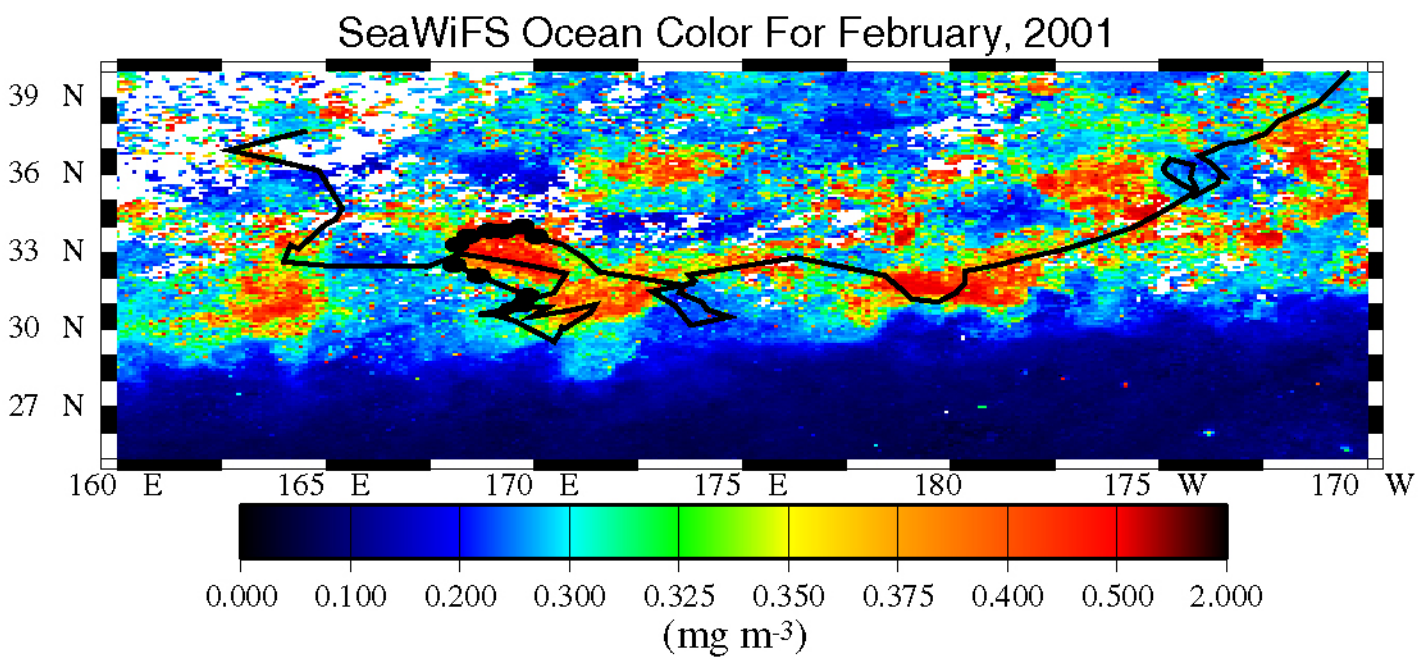
2. Users & Collaborations

Regional Agencies/Institutions

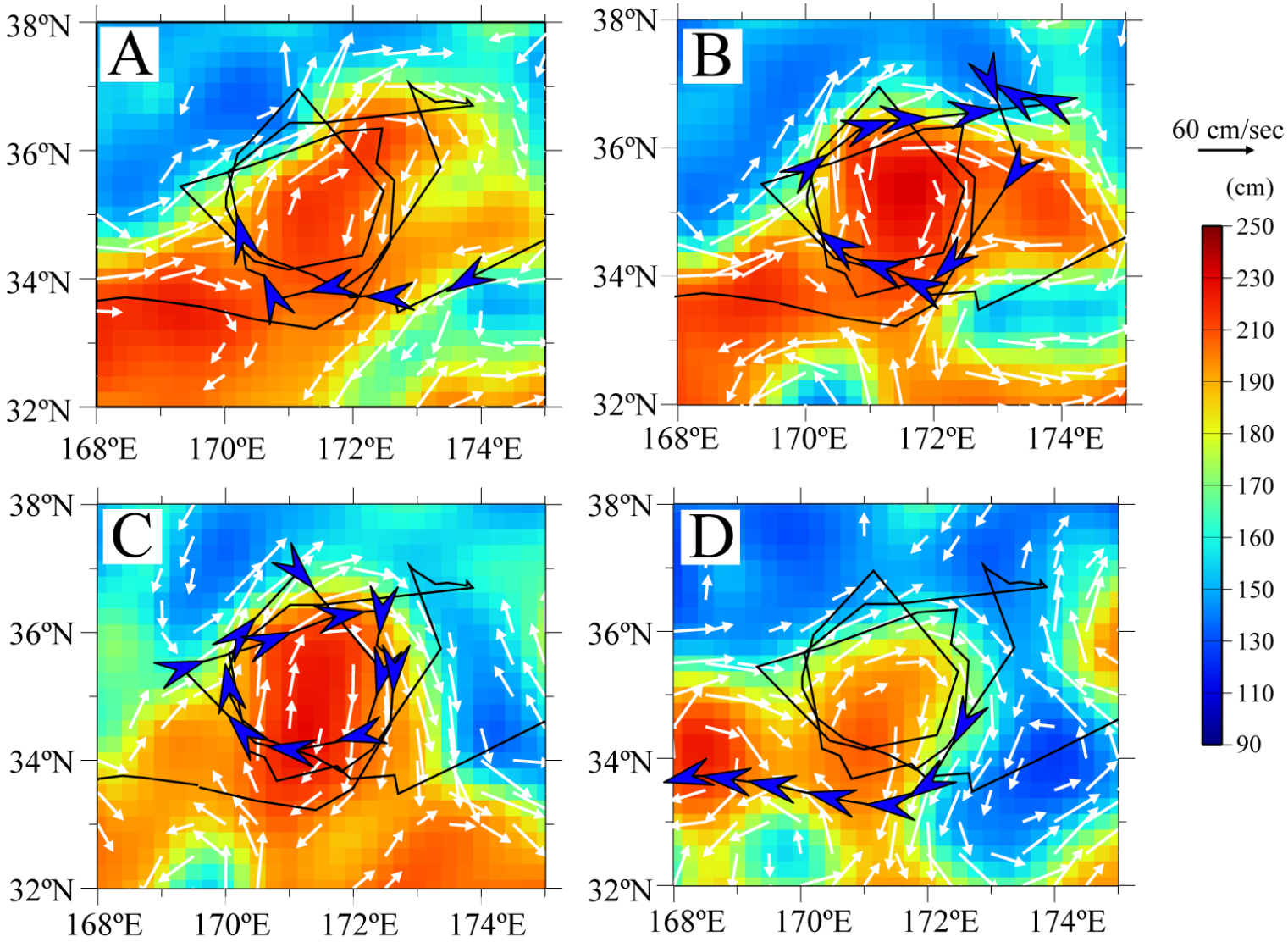
- NOAA Pacific Islands Fisheries Science Center
- NOAA National Weather Service – Honolulu Forecasting Office
- NOAA Integrated Data and Environmental Applications (IDEA) Center
- PacIOOS & HiOOS
- East-West Center PacIS
- The Nature Conservancy – Coral Triangle & MPA Initiative
- University of Hawaii – International Pacific Research Center (IPRC)
- NOAA Pacific Services Center
- University of Hawaii – GEARUP Program
- Western Pacific Regional Fishery Management Council



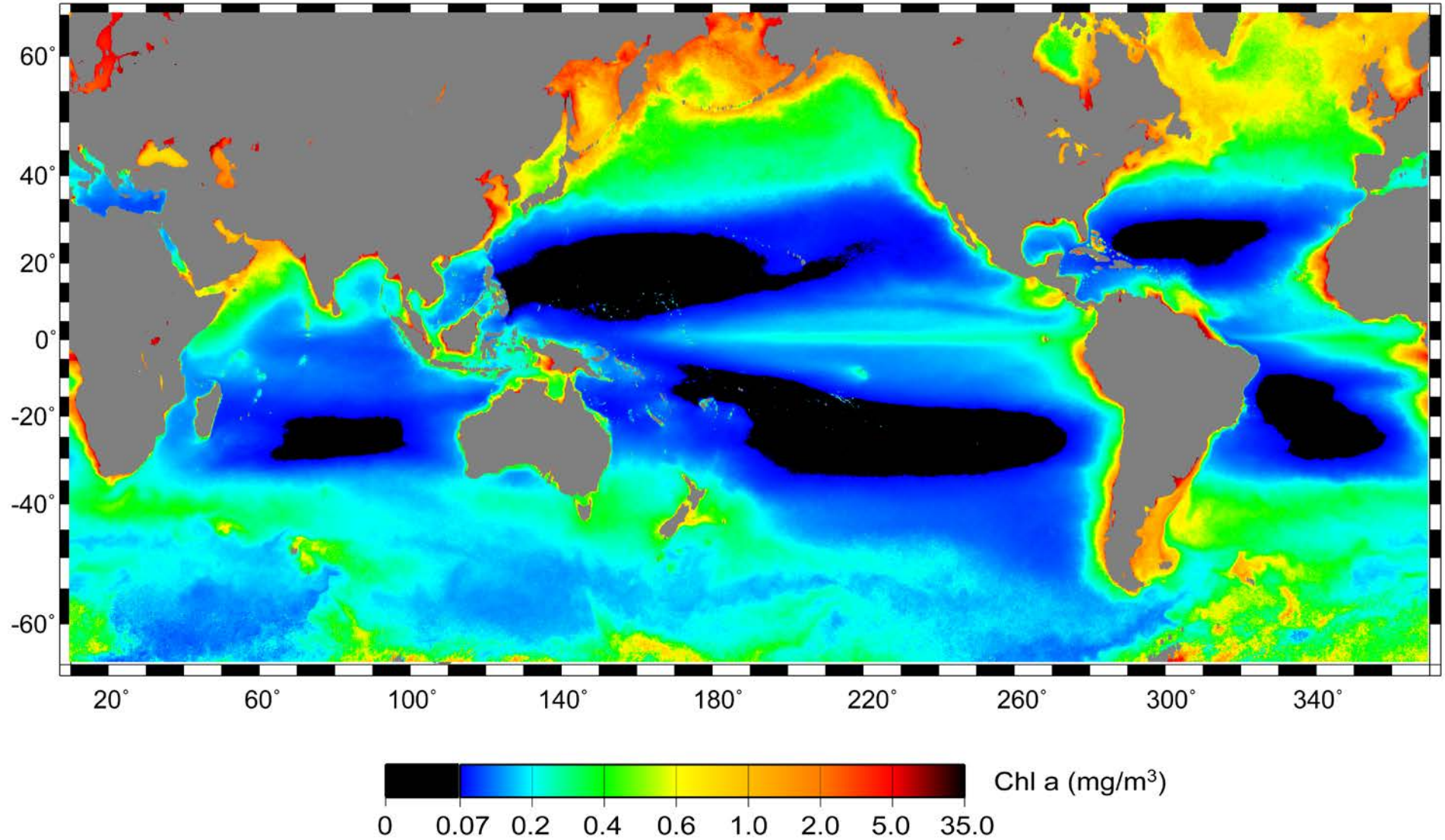

Sea Surface Height for 2/15/01 - 2/21/01
40 cm/sec
40°N
35°N
30°N
160°E
170°E
180
170°W
90 110 130 150 160 170 180 190 210 230 250
(cm)


SeaWiFS Ocean Color For February, 2001
39 N
36 N
33 N
30 N
27 N
160 E
165 E
170 E
175 E
180
175 W
170 W
0.000 0.100 0.200 0.300 0.325 0.350 0.375 0.400 0.500 2.000
(mg m-3)

Loggerhead track over SSH and geostrophic currents for October 2003 (A), November 2003 (B), December 2003 (C), and January 2004 (D)



SeawiFS surface chlorophyll climatology with oligotrophic gyres in black

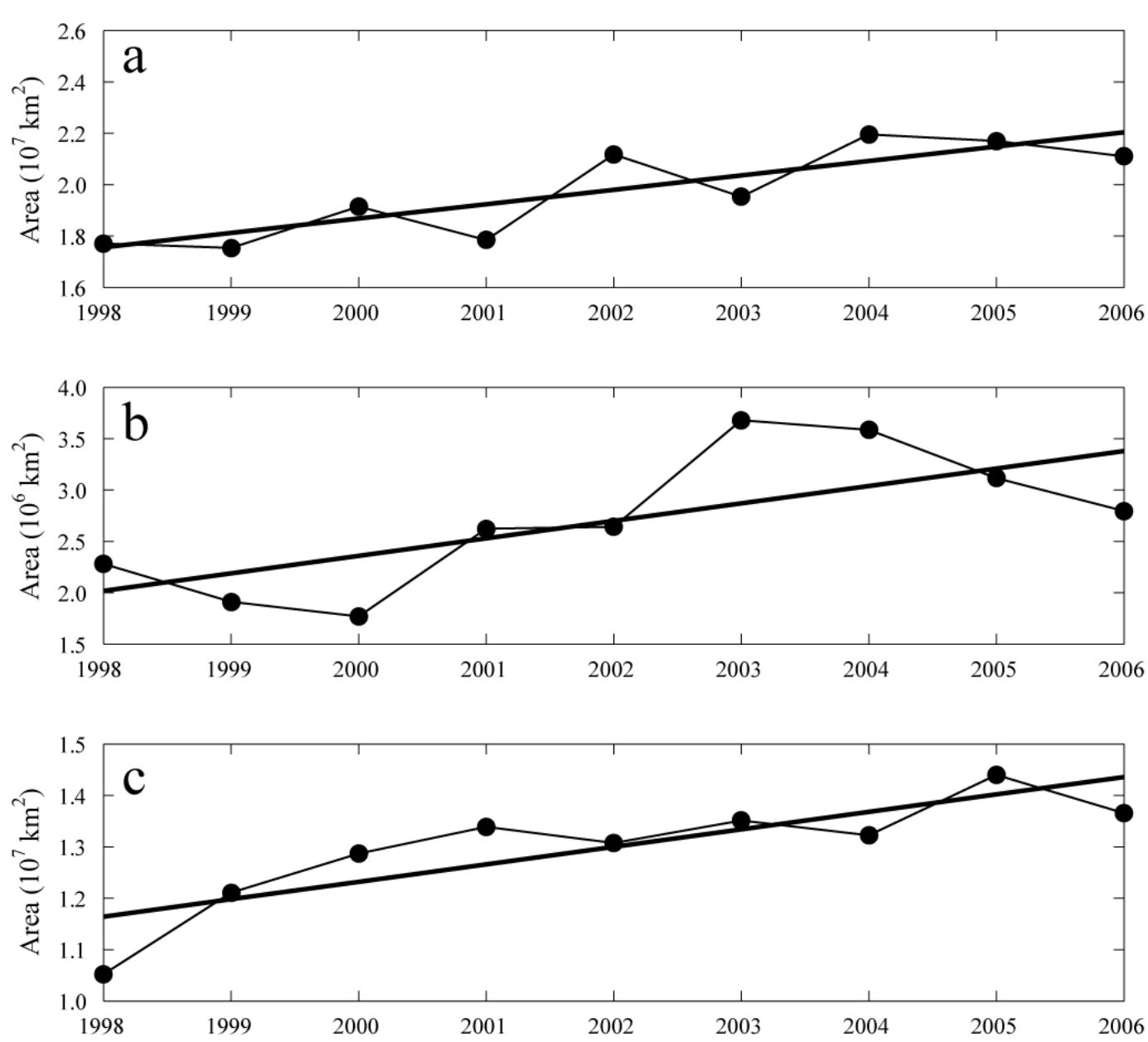


Change in mean quarterly oligotrophic gyre area

Top: North Pacific, quarter 4

Middle: North Atlantic, quarter 1

Bottom: South Pacific, quarter 3



Trend in oligotrophic gyres based on GAM linear term

Ocean	1998 mean area (km^2)	Increase in area (km^2/yr) (%/yr)	p-value
North Pacific	16,222,653	353,519 (2.18)	2.5e-08
South Pacific	18,041,685	245,766 (1.36)	1.5e-06
North Atlantic	4,010,147	172,455 (4.3)	1.4e-09
South Atlantic	6,100,571	48,075 (0.79)	0.026
Total	44,375,056	807,024 (1.85)	-